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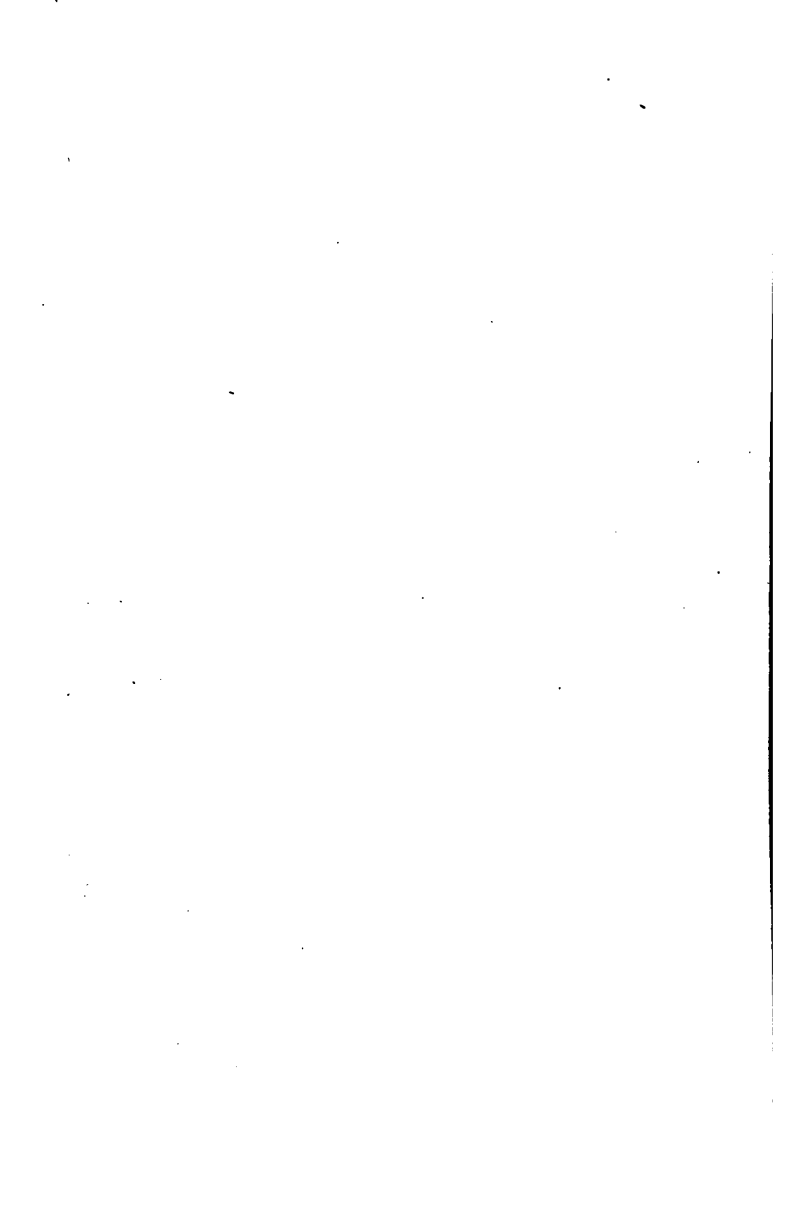
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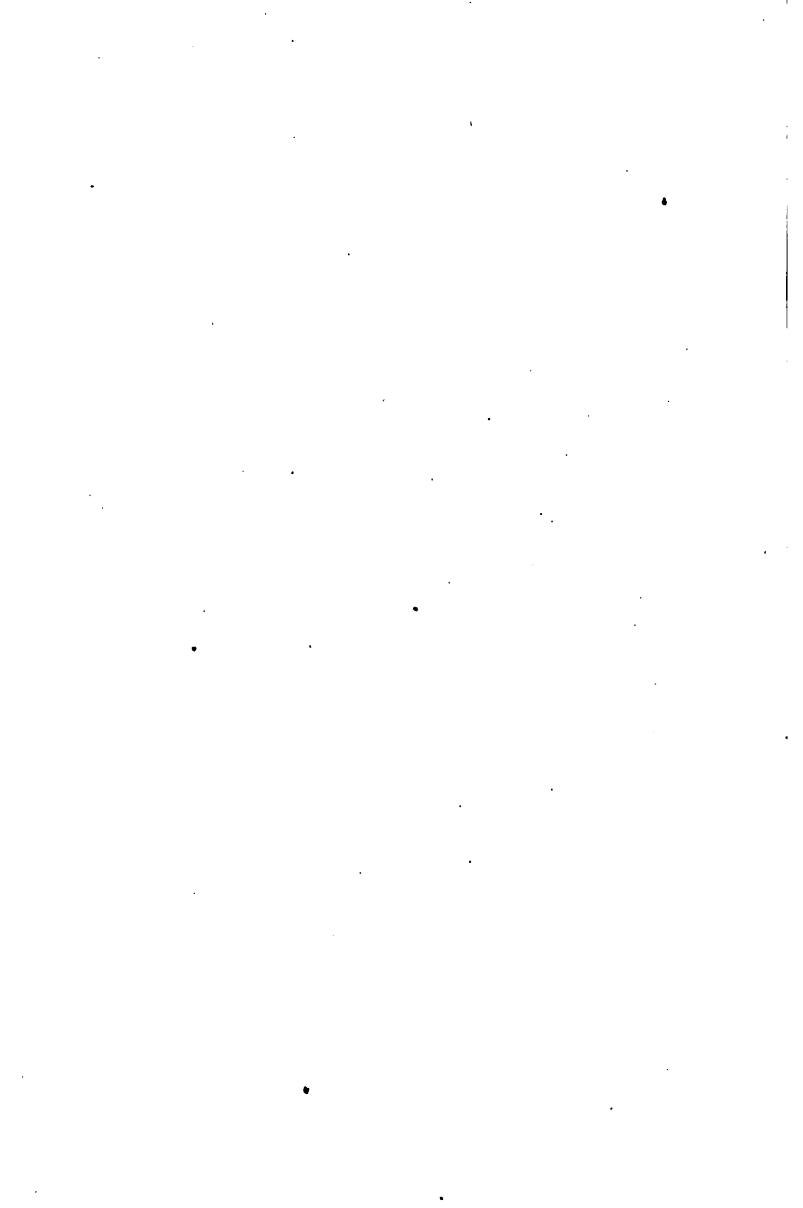
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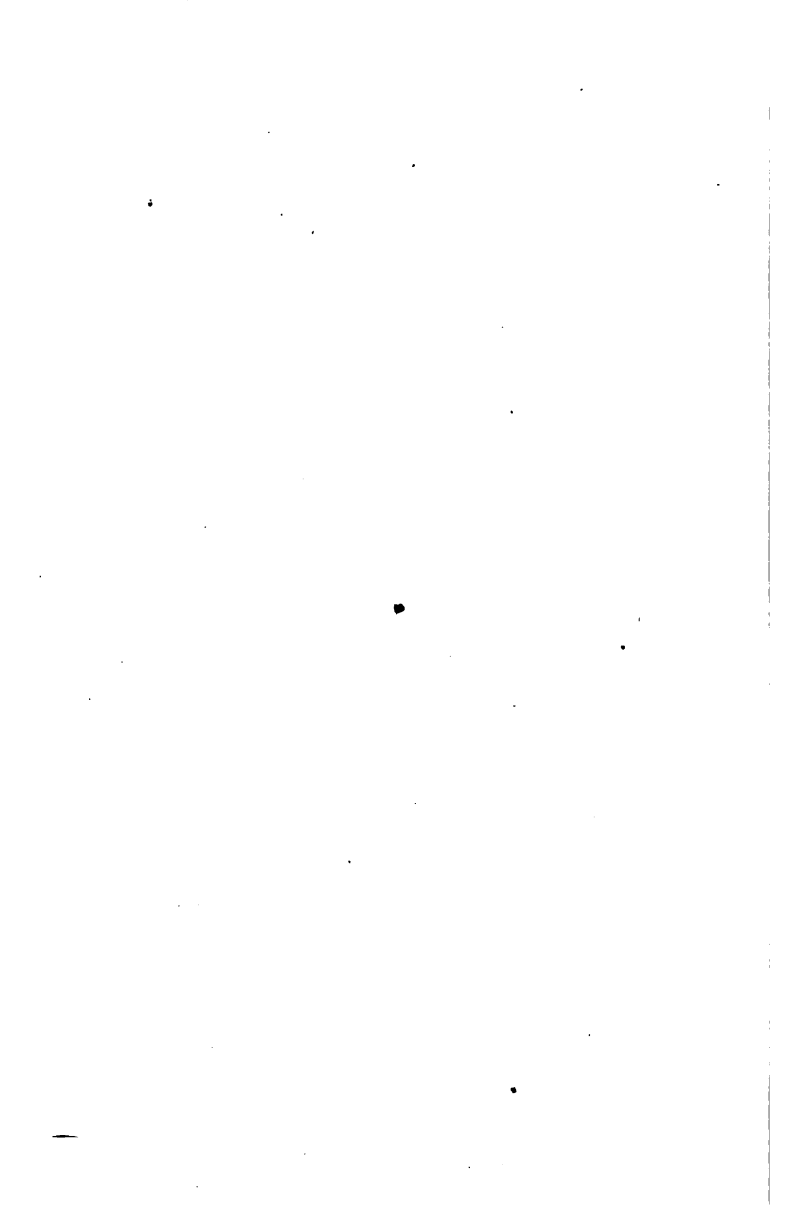
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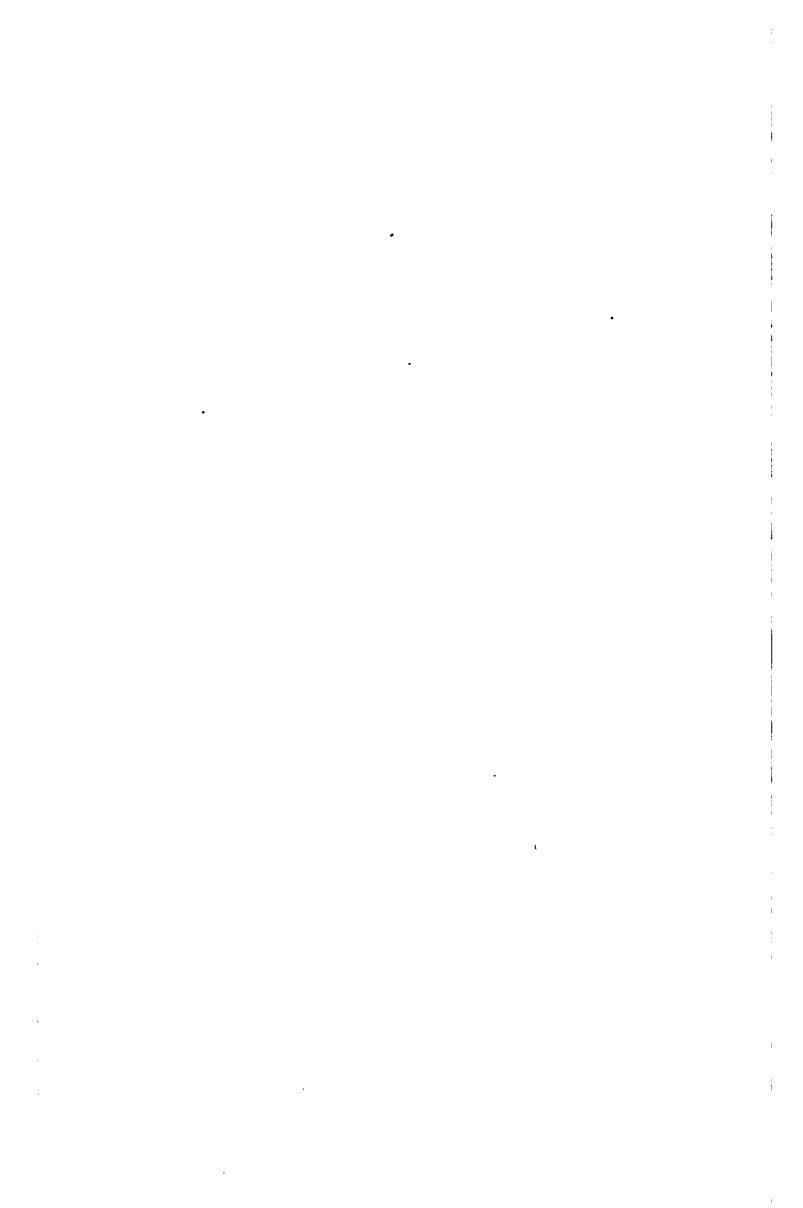


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HISTORICAL SUMMARY
OF
METALLIC MONEY.

BY
ROBERT NOXON TOPPAN.



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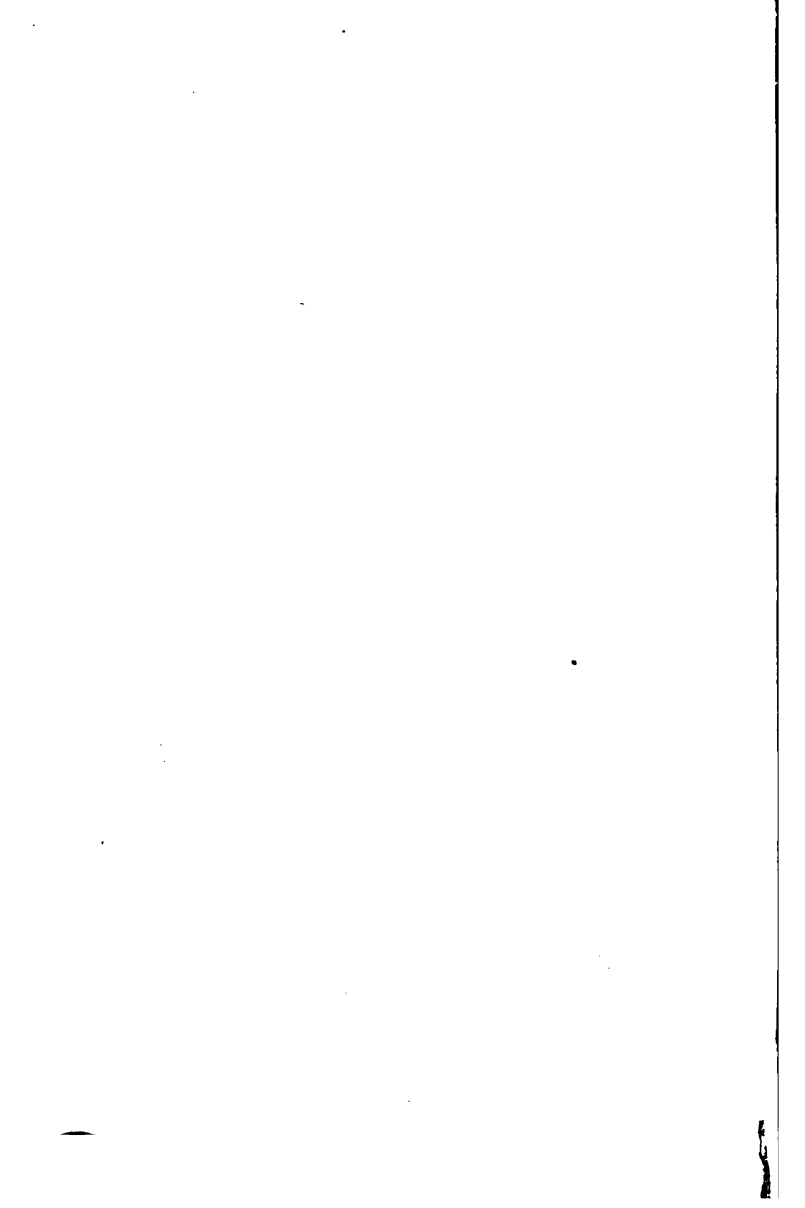
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HISTORICAL SUMMARY OF METALLIC MONEY.

I.

AN attempt has been made in the following pages, however imperfect may be the execution, to give a brief account of some of the most important facts in the history of coined metallic money in ancient and modern times.

Such a summary of the past appears necessary to enable one to judge correctly of the monetary questions of the present, or to forecast the future.

The facts which are here presented have been gathered from Böckh, Mommsen, Queipo, Brandis, Lenormant, and others who have written on the monetary systems of the ancients; and from Scaruffi, Leblanc, Lord Liverpool, Chevalier, Levasseur, and many more who

treat of the more recent periods of monetary history.

As our review extends over twenty-five centuries, it will only be possible to consider the general features of the subject. Those who wish to study more in detail the changes that have taken place must have recourse to the various works in which the separate portions of monetary history are examined.

As is well known, the steps in the development of commerce have been, first, barter; then the selection of a common medium of exchange, generally some product of the soil, or cattle, as was the case with most of the Aryan tribes; and finally the adoption of some metal possessing qualities of durability and divisibility. The reason for each change was the greater convenience obtained. Any medium of exchange is more convenient than direct barter, and a metal is more convenient than food, which can easily deteriorate, or cattle, that are perishable.

At what epoch metals were first used it is impossible to say; but that they were employed as media of exchange many centuries before the adoption of coinage—that is, before the government placed its stamp upon disks of

metal guaranteeing their weight and fineness — is not to be doubted. “Great and flourishing empires, like those of Egypt, of Chaldaea, and of Assyria, have existed thousands of years in wealth and prosperity, with commercial relations as extensive as those of any people of antiquity, making use constantly of the precious metals in their business transactions, but entirely ignorant of the employment of money.”¹

The metals used were naturally those at hand. In Lydia and part of Asia Minor gold was abundant, while in Lycia and Greece there was much silver, and in Egypt, Sicily, and Italy copper was the prevailing metal. These three metals must be considered as pre-eminently the money metals, and they have come down to us as such ; while iron, tin, and platinum were only employed temporarily, and never became engrafted in any system permanently. This fact must not be forgotten ; for, although copper has played a subordinate part in modern times, it is still one of the three money metals, and at one period was as much regarded in the light of a measure of value as either silver or gold.

¹ Lenormant, *La Monnaie dans l'Antiquité*, vol. i. p. 88.

The invention of coinage, as it is called, — that is, placing a seal or mark by the government on disks of metal to guarantee their weight and purity, — is supposed to have taken place in Asia Minor seven or eight hundred years before Christ. Herodotus claims the invention for the Lydians, but some of the modern writers attribute it to one of the Greek cities of the coast. Whether invented by the Lydians or the Greeks, it was a most important step in advance in commercial intercourse. From that time forth it was no longer necessary to weigh the piece or pieces of metal at each transaction. The idea spread to Persia on the east, and to Greece on the west. From Greece it was transplanted to Sicily and Italy, to some portions of Europe and Africa, and from Rome it has come down to modern times, so that all the modern monetary systems are simply the continuation or development of older ones. To show how closely we are connected with the ancients, it has been stated that until comparatively recently some of the copper coins circulating in Spain were Roman pieces struck during the Roman empire; and Humphrey goes so far as to say that even gold pieces of Philip of Macedon have been found

in modern times still circulating in the remote provinces of the East.¹

In Lydia and in the Greek cities of Asia Minor gold was the first metal coined. The unit of the systems was the stater, which in weight was originally the sixtieth part of a Babylonian mina, becoming in time the fiftieth part, and the mina was in turn the sixtieth part of the talent. The weight of the stater was very nearly the same as an American ten-dollar piece. Even after gold had begun to receive the official stamp, silver continued to circulate in an uncoined form for some time. The relative legal value of the two metals was the same as that prevailing in Assyria, and which appears to have prevailed in that part of Asia for many centuries. The value was 1 of gold to $13\frac{1}{3}$ of silver.

Cræsus, the last sovereign of Lydia, who lived in the sixth century before Christ, reformed the monetary system of his kingdom, adopting as unit a piece of half the weight of the former one, and to this was transferred the name of stater, it being of a more convenient size.² The gold stater was now a coin of very nearly the weight of the five-dollar piece. That being the

¹ Humphrey's Manual, p. 79.

² Brandis, p. 192.

unit of the system, the silver pieces had to be coined according to their relative value to it. Twenty silver drachmæ were made equal in value to one gold stater. In order to preserve the ratio of 1 to $13\frac{1}{3}$, the silver drachma was made to weigh what is now 5.44 metric grams, and the stater to weigh 8.16 grams.¹ If the figures 5.44 are multiplied by 20, — the number of drachmæ in a stater, — and then divided by 8.16, it will be seen that the result is $13\frac{1}{3}$.

The divisions of the gold and silver pieces were numerous, — much more so than in any modern system. The gold unit was generally divided into $\frac{1}{3}$, $\frac{1}{6}$, and $\frac{1}{12}$. The multiples and divisions of the silver drachma were often more numerous, including a 4, a 2, and a 1 drachma piece, $\frac{3}{4}$, $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{6}$, and $\frac{1}{12}$. The smallest gold piece in Lydia was $\frac{1}{12}$ of the stater, and the smallest silver $\frac{1}{6}$ of the drachma.²

It is difficult for us to understand how such small coins could be used, the twelfth of the stater weighing very nearly a third of the American gold dollar, or the five-franc gold piece, and the smallest silver less than a third of a

¹ Metric weights are used for the sake of convenience; a gram being equal to 15.432 grains, and a grain consequently 0.06479 of a gram.

² Brandis, p. 193.

ten-cent piece. Whether any medium of exchange, such as the cowry shells employed in India, was used in transactions below the value of the smallest silver piece, is not known. What we call token coinage seems to have been originally entirely unknown.¹

The Lydian system was therefore, to a certain extent, like that of England at the present time, the gold stater representing the sovereign, and the drachma the shilling, with this difference, that the drachma was in reality at that time the twentieth part of the stater, while the shilling is now only nominally the twentieth of the sovereign.

It was after the conquest of Lydia by Cyrus that coinage was introduced into Persia. "It was from the Lydian kings, whom they had dethroned, that the Persians took the model of their darics."² Darius, following the example of Croesus, established as unit of the Persian system a gold piece weighing a little more than the Lydian stater. To this coin was naturally given the name of daric. The silver was coined in the same way as in Lydia, twenty drachmæ making the stater, at the relative value of 1 to 13½. As the daric weighed 8.40 grams, the

¹ Brandis, p. 193.

² Lenormant, vol. i. p. 137.

drachma was made to weigh 5.60 grams. At what period of history the proportion of 1 to 13½ between gold and silver was first established, it is impossible to say. How it was maintained, or whether gold predominated at one time and silver at another, is a problem that has not yet been solved. It is, however, certain that this legal proportion existed many years before the invention of coinage.¹

Gold was coined exclusively by the monarch, and circulated throughout the whole empire. So extensive were the Persian conquests, that the daric may be looked upon as the international coin of Asia. Its purity and weight being maintained strictly for a long series of years, it was received with favor outside of the limits of the Persian monarchy.

The amount of gold in circulation in Persia and Asia Minor was very great. Herodotus speaks of a certain Lydian, by the name of Pythius, who had in his house 3,993,000 gold darics. Xerxes, who was his guest at one time, in a generous mood presented his host with 7,000 darics in order to round the number to four millions. The pay of the soldiers was in gold. Cyrus in his expedition makes pres-

¹ Brandis, p. 91.

ents of gold coins to his followers, and, yielding to the murmurs of his troops, he increases their pay from one daric a month to a daric and a half. The priest and soothsayer Silanus, to whom he has given 3,000 darics, runs away with his gift. Xenophon, at the close of the expedition, sold his horse at Lampsacus for fifty darics, which his friends bought back and restored to him. Alexander the Great found immense treasures of gold and silver, coined and uncoined, at Susa, Persepolis, Ecbatana, Babylon, and Damascus. At Susa 50,000 talents were captured, of which one fifth was in gold darics and the rest in uncoined gold and silver. At Persepolis the treasure amounted to 120,000 talents, requiring five thousand camels to transport it. At Ecbatana 180,000 talents were seized. No mention is made of the amount captured at Babylon. Quintus Curtius writes that from the Babylonian treasure each Macedonian soldier received 600 drachmæ, each horseman 500, and each foot-soldier 200. The same author says that the king of Persia had 5,000 talents of gold "for a pillow," and 3,000 talents of silver "for a footstool," deposited in cabinets under the head and foot of his bedstead.

To account for the large proportion of gold to silver found in Lydia, Persia, and the Greek cities of Asia Minor, at the time of Alexander's conquests, it is supposed that the legal ratio of 1 to $13\frac{1}{3}$ was somewhat higher than the market ratio; that a pound of gold was not worth $13\frac{1}{3}$ pounds of silver, but somewhat less, and that consequently silver had been driven from circulation.¹ It is certain that, towards the end of the Persian monarchy, silver was exported in large quantities. "In the last years of their empire the Achæmenides had the pretension to maintain legally, against all the laws of political economy, the value of gold at $13\frac{1}{3}$ to 1 of silver, although it had depreciated at least eleven per cent. The result was an exportation of silver upon such a scale that it disappeared almost completely from the interior provinces of the empire, in which gold alone remained, considerably depreciated, but preserving the same nominal value."²

The monetary systems of the Greek cities of Asia Minor were the same as those of Lydia and Persia. Much gold was coined in the first place, and comparatively little silver until after they fell under the dominion of Persia, when,

¹ Brandis, p. 196.

² Lenormant, vol. i. p. 177.

the coinage of gold becoming exclusively a royal attribute, silver alone was coined by the cities. The silver, however, had to conform in value to the daric as the unit. "The Greek cities subject to the king of Persia, although only coining silver money, were obliged to issue it so that it should conform in value with the gold of the king, which they had to receive at par. This system was very convenient in practice for small daily transactions, so long as the proportion of the two metals remained unchanged, or changed so slightly that a small premium could be paid for one or the other metal. But it had the inconvenience of exposing the money circulation to all the perturbations which would result from a considerable change in the proportion, either in the fall of gold or fall of silver. When that happened, it was necessary to demonetize one of the metals in order to change the weights, and to recoin according to the new valuation."¹

The privilege of coining silver concurrently with the king seems to have been left by Persia to the conquered states, or conferred upon the satraps governing the provinces. In Egypt the Persian satrap Aryandes lost his life osten-

¹ Lenormant, vol. i. p. 176.

sibly upon the accusation that he was making his silver coins of greater purity than the Persian,—probably, however, from fear of his attempting independence.

The early coins issued by Lydia and the Greek cities of the coast were oval thickish pieces, bearing on one side the heads or figures of animals,—the symbols of the various cities,—and on the reverse an indentation formed by the instrument holding the metal when it was being stamped. The daric bore, in place of an animal, the figure of a kneeling archer, which represented the king.

The system of the Lycian confederation, in the southern part of Asia Minor, was based on silver. Twenty-three cities were bound together in a monetary league. The coins bore, as a distinctive symbol of the league, a small figure called a triquetra, very much like the arms of the Isle of Man,—three legs united forming a star,—in addition to the symbol of the city issuing the coin. The association seems to have been voluntary, and is an early instance of an attempt to break down local barriers. Their monetary independence was not curtailed by their Persian conquerors; and so far did they carry it, that no foreign silver coin

was current in the confederation unless it had received the official stamp or countermark from the properly constituted authority.¹ This is probably one of the earliest, if not the earliest, instance of a monetary union.

The system of Palestine was based also on silver. The early Biblical records speak of shekels of silver, and their divisions, which were originally uncoined pieces of metal. The shekel was the unit of the system. Its weight was 14.55 grams, somewhat heavier than the American half-dollar piece, and it was divided into 20 gerah. Fifteen half-shekels, instead of twenty drachmæ, were equal in value to a gold stater at the ratio of 1 to 13½. Even the large amounts of gold mentioned as belonging to David and Solomon were valued in silver, according to Brandis.² The amount of treasure must have been very great, for, upon rifling the tomb of David nine hundred years after his death, Hyrcanus found three thousand talents of precious metals concealed in it.

After the conquest by the Persians, Persian money circulated in Palestine.³ Then came the conquest of Alexander the Great and the

¹ Brandis, p. 266.

² Ibid., p. 98.

³ Ibid., p. 104.

reign of his successors. Under Antiochus the Maccabees revolted, and to them was granted the privilege of coining. Once more the shekel reappeared, now in a coined shape (144 B. C.), but only for a short time. It bore on one side the figure of a vase or cup in which the manna was kept, and on the other, Aaron's rod, which had blossomed. Overrun by the Roman armies, Palestine became a Roman province, and had to accept the Roman system of money. The political changes through which the land passed can be traced in the passages of the Bible which mention coins. The widow's two mites, spoken of by St. Mark, were two lepton copper pieces or a two-lepta piece, — a remnant of the Greek domination, — and the denarius, or the penny as it has been translated, was a silver piece of the Roman conquerors.

The monetary system of Egypt differed from those of Lydia, Persia, and Palestine. It was based on copper, which metal was for centuries the measure of value. The unit of weight, which was also the unit of the monetary system, was the outen, weighing about 94 grams, or about one quarter of the Troy pound. It was divided into ten kat. The series of ancient Egyptian weights exhibited in Paris in 1878

consisted of many multiples and divisions of the outen, from 20 outens, which was the largest, to $\frac{1}{10}$ of a kat or $\frac{1}{100}$ of an outen.

Lenormant mentions a papyrus of the XIXth dynasty, which reigned in the fifteenth and fourteenth centuries before Christ, giving a list of articles with their prices in copper. An ox was worth 119 outens; a knife, 3 outens; eleven measures of oil, 10 outens. The pay of the workmen attached to the temples was five outens of copper a month.¹ This was of course uncoined metal, like the *aes rude* of the Italians. Coinage was introduced after the Persian conquest, and it is presumed that the satrap Aryandes was the first to coin silver. Although copper was the standard money, and continued to be so even down to the time of the Ptolemies, a considerable amount of gold and some silver flowed into the country from neighboring states. The sculptured monuments give evidence of gold being brought in the shape of rings, as well as in dust carried in bags. It is interesting to know that ring money is still in use in some portions of Africa.

In Greece we find that silver was the predominating metal, the silver mines being pro-

¹ Lenormant, vol. i. p. 95.

ductive. The mines of Laurium in Attica were a source of wealth to Athens, and brought annually from thirty to forty talents. All transactions, public and private, were based on silver. Themistocles advised that the surplus money from the mines of Laurium should be invested in vessels of war to fight against Ægina, instead of dividing the amount among the citizens, which would give them ten drachmæ each. Themistocles was bribed at one time by the Eubœans with thirty talents of silver. At the battle of Salamis a reward of 10,000 drachmæ was offered to any one who would capture Queen Artemisia alive. In the Acropolis at Athens there was at one time a reserve fund of 9,600 talents of coined silver. It is not necessary to give further examples to show that silver was the measure of value, which continued to be so until Roman imperial times.

The coins of the island of Ægina, which are undoubtedly the oldest of the purely Greek, bear on one side a tortoise, and on the other simple indentations. Pheidon, king of Argos, had the money of his state coined in Ægina; and Argos, consequently, is the first point on the mainland of Greece where coined money appeared. It is generally thought that Solon

introduced coinage into Athens, probably about 594 B. C. He substituted fines of money instead of cattle, rating one drachma for a sheep, and five for an ox. He made the Athenian drachma of less weight than the Æginetan, being influenced, it is supposed, by the size of the daric.¹ The Athenian drachma became in weight one half of the daric, or about 4.25 grams, which is less than the franc or the five-cent nickel piece, both of which weigh exactly five grams. As the Æginetan drachma weighed 6.30 grams, the diminution acted like a partial bankrupt law. All existing contracts and debts being based on the Æginetan standard, debtors were benefited to the extent of the reduction. The multiples and divisions of the drachma were very numerous. The largest coin generally was the tetradrachma, or four-drachma piece; then came the two and the one. As the drachma was divided into six oboli, the coins below the drachma were generally reckoned according to the number of oboli contained in them. The tetraobol, or four-obol piece, was $\frac{2}{3}$ of the drachma; the triobol, $\frac{1}{2}$ of the drachma; the diobol, $\frac{1}{3}$ of the drachma, which was the coin given to the citizens who took part

¹ Mommsen, p. 55.

in the public assemblies; the trihemiobol, $\frac{1}{4}$ of the drachma; the obol, $\frac{1}{6}$; the tritemorion, $\frac{1}{8}$; the hemiobol, $\frac{1}{12}$; and the tartemorion, $\frac{1}{24}$ of the drachma.

It is difficult to conceive how these minute pieces of silver could be struck, or used in circulation; but so partial were the Athenians to their system that, when copper was first introduced, there was so much opposition that it had to be withdrawn. However, copper became a subordinate part of the system about 400 B. C. The principal piece was called a chalcus, 48 of which made the drachma. The chalcus itself was divided into seven lepta, so that the number of lepta in a drachma were 336. In the present Grecian system the drachma weighs five grams, and is divided into 100 lepta. The multiples and divisions of the chalcus were numerous, consisting of the pentechalcus, the tetrachalcus, trichalcus, dichalcus, chalcus, tetra-lepton, dilepton, and lepton. As silver was the standard, there was no necessity of making the weight of the copper coins conform to their nominal value. The relative value of silver to copper at Athens, according to Lenormant, was 1 to 72, which is supposed to be the lowest in any part of the Grecian world, and was

owing to the large amount of silver in the market, and the comparative scarcity of copper. How much silver was in circulation at any one time, it is of course difficult, if not impossible, to say. The purchasing power of silver, however, differed very much at different times. From the time of Solon to that of Demosthenes it had decreased to such an extent that prices were about five times as high, showing that the amount of money in circulation had increased very largely.

Gold was rarely struck in Athens. What was required in commerce came from foreign countries. In the inventories taken at different times of the treasures in the Acropolis at Athens, gold staters of Cyzicus, darics, gold staters of Phocæa, and gold staters of Ægina are frequently mentioned. When Lysias was seized in Athens by order of the Thirty Tyrants, the gold money found in his house was all of foreign mintage. Lysias himself describes the scene: how he attempted to bribe Piso, who had come to his house to arrest him, and offered a talent, which was accepted, but when he opened his strong-box to take out the money, and Piso saw what it contained, he seized the whole, amounting to three talents of silver, 400

gold staters of Cyzicus, 100 darics, and four silver vases.

There was no attempt made to establish a ratio between gold and silver, as was done in Asia. "With their marvellous instinct for commerce and their experience in banking operations, the Athenians conceived an entirely different solution of the problem. Like all the Greeks of Europe, they had adopted the standard of silver; that was, in fact, the metal which the mines of Laurium poured in an almost inexhaustible amount upon the market, and the exportation of which constituted one of their principle sources of wealth. Gold, however, abounded in the market of Athens, for they were able to procure as much of it as they wished in exchange for their silver; the inscriptions found would be sufficient to attest to the great quantity of gold in the circulation of Attica, even if we did not have a still stronger proof in the low relative value of 1 to 12, or 1 to $11\frac{1}{2}$, between gold and silver, which we have seen was the case towards the end of the fifth century before Christ, and during a large part of the fourth. From the inscriptions, the historians, and the orators, it is easy to see that, although all valuations are made in drachmæ, the instru-

ment of exchange for large commercial affairs was gold during the whole period extending from Pericles to Alexander. The Athenians, however, preferred not to coin gold in the name of the Republic, but to leave it in the hands of commerce in the form of ingots or foreign coin, the price of which was fixed by the bankers. The Athenians did not attempt to coin their gold pieces so as to make them represent an exact number of units of silver, as the relative value might change from day to day. They made the gold stater weigh exactly two silver drachmæ; that is, $\frac{1}{50}$ of the mina. The stater was not, therefore, a piece of a certain value, but a coin of a certain weight. It was an ingot, the weight and fineness of which were guaranteed by the government, and whose value in relation to the standard silver followed the commercial fluctuations between the metals. There was no necessity of ever demonetizing the gold pieces; they remained in circulation, always accepted for their intrinsic value, on account of their excellent quality.”¹

During Philip's time the relative value of gold to silver was 1 to $12\frac{1}{2}$. Through the conquests in Asia by his son Alexander, and

¹ Lenormant, vol. i. p. 177.

the consequent influx of gold into Greece, the ratio dropped rapidly to the proportion of 1 to 10. "The price of gold in Greece seems to have fallen to the proportion of 1 to 10 of silver, when, in consequence of the victories of Alexander, large masses of that metal flowed to the West."¹ The sudden addition of a large quantity of gold was like the outflow of a rich mine. Even before the victories of Alexander, a considerable amount of gold had come into circulation through the coinage of Philip, who had wrested some valuable gold mines from the Thracians. The command of these mines had been a most important aid in carrying out his designs in Greece. The supply was so abundant, that he attempted the establishment of a double standard of gold and silver, at the ratio of 1 to $12\frac{1}{2}$. The gold stater of Alexander, like that of his father, weighed 8.50 grams, and was equal to 25 drachmæ at the ratio of 1 to $12\frac{1}{2}$; but the fluctuations in the relative value of the two metals were such that he reverted to silver as the standard, and this standard was carried by him throughout the East.

"By Alexander the Great the Grecian silver standard was spread over the Orient, and silver

¹ Brandis, p. 86.

from that time forth became the usual and the cheaper instrument of payment.”¹ “Alexander the Great, as faithful imitator of the monetary system of Athens, gave to his gold the same weight as to his silver, without caring whether the result would be to make the relation of value between coins of the two metals a whole or a fractional number. It was in this way that he gave to his monetary system such an elasticity that his coins of both metals were copied for more than a hundred years after his death, without undergoing in either the gold or silver any sensible alteration in weight. This was done over an immense extent of territory, from the limits of the Black Sea to those of Egypt, and from Greece to the Euphrates. That is to say, the gold staters and the tetradrachmæ of Alexander were struck precisely of the same weight in countries where the proportion of value of the two metals was certainly different, and where the coinage continued without any change during a whole century, which witnessed, as we have already shown, great fluctuations in the relative value of gold and silver. The example of Alexander was followed in most of the monarchies which arose

¹ Brandis, p. 153.

from the division of his empire. Among the Ptolemies alone do we find that the old method was restored. Under Soter the gold stater was divided into 25 drachmæ, because the relative value happened to be 1 to $12\frac{1}{2}$; but after his reign we notice that, although the silver pieces remain unchanged, there is a diminution in the weight of the gold, which must be attributed to a legal measure having for its object the maintenance of the value of the stater at 25 drachmæ, at a ratio of nearly 1 to 13."¹

By the victories of Alexander the old monetary systems of Asia were overthrown. Silver was now the standard instead of gold, and copper, although it had been added to the various systems as a subsidiary coinage before the conquest, became more developed after Alexander's time. "After the overthrow of the Persian monarchy copper money became of much greater importance, with the spread of Alexander's monetary system throughout the limits of his empire. His silver was generally coined only in large pieces, like the tetradrachma or drachma, only exceptionally in triobol pieces, and seldom in obols; all small transactions must, therefore, have been made by means of

¹ Lenormant, vol. i. p. 180.

copper money.”¹ Instead of dividing the obolus, however, into 8 chalci, as was done in Athens, it was divided into 10, so that the drachma of Alexander was equal to 60 chalci, instead of 48. The same plan was adopted in Egypt, with this difference, however, that the copper drachma was there the unit instead of the silver drachma.²

One important result of Alexander's victories in the East was the establishment of the kingdom of Bactria, from which undoubtedly the knowledge of coinage spread to India. The early coins of Bactria were Grecian in type, but deteriorated in time, exhibiting a more Oriental character. Some of the coins were small oblong pieces, which were used not only as money, but also as weights and measures of length.

In Egypt the Ptolemies, as successors of Alexander, attempted to establish a trimetallic standard. The legal relative value of gold to silver was 1 to $12\frac{1}{2}$, and of silver to copper 1 to 60. Copper, which had for centuries been the exclusive measure of value, still maintained its place side by side with gold and silver. In small transactions in the interior, however, it was almost exclusively used. The legal propor-

¹ Brandis, p. 298.

² Ibid., p. 302.

tion of 1 to 60 between silver and copper did not, it appears, last long. "It seems only to have been maintained during the reigns of the first three Ptolemies, when a considerable quantity of silver was struck. Later, when silver became scarcer, the relative value between the copper drachma and the silver drachma changed greatly; the proportion was subjected to great fluctuations."¹

The market value of copper compared to silver in different parts of the Grecian world is examined by Lenormant. He finds that in Athens the general proportion was, as already stated, about 72 to 1, which is the smallest difference to be found among the Greeks, and which is accounted for by the abundance of silver flowing from the mines of Laurium.² In Egypt, where silver was rarer and copper very abundant, the relative value at the time of the Ptolemies was 1 to 161. How the legal relative value was maintained by the side of the market value there are no means of discovering, but it is probable that the copper money became in time simply a credit or token currency.³

It has already been seen that the gold coins

¹ Lenormant, vol. i. p. 154.

² Ibid., p. 153.

³ Brandis, p. 304.

of the Ptolemies were altered to meet the change in the relative value of gold to silver, and if the copper became, as was presumably the case, a token currency, silver became, of course, the standard, as to it were referred both gold and copper.

From the price of copper in different portions of the Grecian world Lenormant draws the conclusion that the average was 1 to 100, or 1 to 120. It is somewhat singular that the same ratio is given by Say as prevailing in France about the year 1800.¹

Returning to the Athenian coinage, it may be interesting to notice that the early pieces, like the primitive coins of Asia, were struck only on one side, which generally bore the figure of an owl, sacred to Minerva. Then both sides bore designs, the owl being retained on the obverse with the abbreviation of the name of Athens, and on the reverse the head of Minerva. These pieces are quite thick. The second series, supposed to be issued about Alexander's time, are thinner and more ornamented, and weigh a little less than the older series. The metal in both series is equally pure, there being but little alloy.²

¹ Say, *Political Economy*, vol. i. p. 314.

² Beulé.

It is not necessary to dwell upon the different drachmæ of various systems. They differed in weight, as in modern times the various thalers, dollars, and dalers have differed from each other.

When the Greeks established their colonies in Sicily, about 700 B. C., they found that island already in possession of a metallic medium of exchange in the shape of uncoined pieces of copper. The unit of the system was the litra, or pound, divided into twelve ounces. In order to adjust the Sicilian system to the Greek, the litra was considered as equal in weight to one half of the mina.¹ When coinage was introduced from Greece considerably later, the metal first coined was not copper, as might be supposed would be the case, but silver. The date is presumably about 550 B. C. Silver being scarce and copper abundant, the relative value of the two metals was 1 to 250; and it was upon this proportion that the coinage was issued. The didrachma-piece was worth ten litra of copper, and was consequently called a decalitron. This was divided into ten silver nummi, each nummus representing a copper litra. The weight of the nummus was about

¹ Brandis, p. 274.

0.85 of a gram, or about half the weight of a gold dollar. Copper money was not probably coined until about 400 B. C.¹ So long as the relative value of 1 to 250 was preserved, a double standard existed of silver and copper. The amount of silver in circulation, however, increased, and that metal would in time have substituted itself for copper as the sole standard, even if that result had not been hastened by the financial distress of Dionysius the elder, who in 367 B. C. diminished the litra to one fifth of its former value. Instead of weighing about 200 grams, it was suddenly reduced to about 40. To such straits was he driven by his financial troubles that he declared himself bankrupt to that extent. A second reduction took place soon after, making the litra only about 20 grams. Silver was now the sole standard, and remained so until Roman Imperial times.²

Many of the coins of Sicily, particularly those of Syracuse, are remarkable for their beauty, — not only the gold and silver, but also the copper. The ten-drachma, or more properly the fifty-litra piece, is famous for the beauty of its designs and the fineness of its execution. The head of Proserpine on the obverse

¹ Brandis, p. 275.

² Ibid., p. 278.

is a work of art, and the figure of Victory in a four-horse chariot on the reverse is full of life.

The Carthaginians, it is presumed, received the idea of coinage from their contact with the Sicilians, and it is probable that all their early coins were struck in the island of Sicily.¹

The Greek colonies in the southern part of Italy seem to have adopted generally the money systems of their parent states. The amount of silver in circulation must have been considerable; for it was by the conquest of those cities principally that Rome drew the supply which enabled her to make a change in her monetary system.

In the development of the Roman system each step can be distinctly traced from the *aes rude* to coined copper, from copper to silver, and from silver to gold. Like Egypt and Sicily, the metallic medium of exchange and measure of value of Rome from early times was copper. The influence of neighboring states led to its being coined. The large, unwieldy oblong pieces, which were cast, appeared probably about 450 B. C., and the round *aes*, or *as*, which was also cast, about 430 B. C. That is the date given of a law which substituted money for cattle

¹ Lenormant, vol. i. p. 139.

in legal penalties, estimating one sheep at ten ascs and an ox at a hundred. The full weight of the as, or pound, divided into 12 ounces, was about 327 grams, less than the Troy pound, which is slightly more than 373 grams. The earliest coined pieces do not come up to the full standard, but are generally about 10 ounces in weight. This is accounted for on the supposition that the foreign silver coins in circulation in Rome, particularly the Sicilian nummus, influenced the coinage, the ratio of silver to copper being 1 to 250, as in Sicily.¹

The as was divided into the semis or 6 ounces, triens or 4 ounces, quadrans or 3 ounces, sextans or 2 ounces, the ounce, and the half-ounce. They bore on the obverse heads of different deities, and on the reverse the prow of a ship, the word "Roma," and a mark indicating the value. These large copper pieces were quite as inconvenient to handle as the minute silver and gold of the Greeks, and they were gradually diminished in size as the amount of silver in circulation augmented. The as was already reduced in weight to four ounces, when silver was first coined in the city, in 268 B.C. The principal silver coins were the denarius, the

¹ Brandis, p. 284.

quinarius, and the sestertius. They bore on the obverse the head of Pallas, and on the reverse Castor and Pollux on horseback, with the word "Roma." They also bore the numerals, X for ten ases, V for five, and II. S for two and a half. The denarius was originally $\frac{1}{72}$ of the pound, and therefore weighed about 4.54 grams, somewhat less than the franc.

In 217 B. C., when Hannibal threatened Rome and there was a great scarcity of money, the denarius was diminished to $\frac{1}{84}$ of the pound, and was decreed to be worth 16 ases, instead of 10, and the as itself was reduced to an ounce. This was an act of bankruptcy. At the end of the second Punic war, silver flowed into Rome in very great abundance as the spoils of war. The quantity was so great that after the year 194 B. C. copper was treated as a token money only.¹ In 89 B. C. the as was diminished to half an ounce; the denarius, however, remaining $\frac{1}{84}$ of the pound, and weighing about 3.89 grams. Like the nummus of the Sicilian system, the sestertius, — the quarter of the denarius, — weighing less than half of a ten-cent piece, was considered the unit, when silver was fully established as the measure of value.

¹ Brandis, p. 285.

The modifications of the relative value of silver to copper are given as follows: at the beginning of the Roman coinage, 1 to 250; then 1 to 240, when the as weighed 4 ounces; when the as was diminished to 2 ounces, 1 to 120 or 140; when the as was reduced to 1 ounce, and the denarius valued at 16 ases, the proportion was 1 to 112; the denarius remaining unchanged, the next reduction of the as to half an ounce made the relative value only 1 to 56, which was very much below the real value, and copper was then regarded only as a token currency, as it is at the present time.¹

The changes in the money unit can be traced in the Roman historians. Livy says that when Duilius captured the Carthaginian fleet (261 B. C.) he took as booty 3,700 gold nummi, 100,000 silver nummi, and 2,700,000 ases. In another place, speaking of the abundant harvest of a certain year, he says that twelve pounds of oil could be bought for one as. All computations were made in ases, even if the metal spoken of was gold or silver. Mommsen gives the year 189 B. C. as the date when the presents made during a triumph were first given in silver; before that time they were given exclusively in copper.

¹ Brandis, p. 284.

In describing the triumphal procession of Paulus Emilius, upon his return to Rome after his victories over Perseus, in 168 B. C., Livy enumerates the amount of treasure carried in the procession: 250 wagons bearing statues and paintings; 750 vases, each containing three talents of silver money, borne by three thousand horsemen; then came silver vases, and gold vases, drinking-cups, gems, etc.; 77 vases each containing three talents of gold coins; then 400 gold crowns; the sum total being estimated at 120 millions of sesterii. To each foot-soldier were given 100 denarii, to each centurion 200, and to each horseman 300. Sabatier gives the total value of the spoils of war brought by Paulus Emilius and placed in the Roman treasury as 230 millions of sesterii.

Notwithstanding the great increase of silver and gold, counterfeiting became more and more frequent. This had been practised by the governments in Greece during times of distress, but never to such an extent as during the civil wars that devastated Italy.¹ In the year 91 B. C. the Senate decreed that out of every eight denarii one should be a counterfeit. To such a state of confusion were the finances afterwards

¹ Lenormant, vol. iii. p. 9.

brought, the good money disappearing from circulation, all prices fluctuating, and transactions rendered difficult, that Cicero wrote, "No one knows what he possesses." An attempt was made in 84 B. C. to remedy this state of things. The Prætor Marius Gratidianus opened government offices, where good money was given in exchange for the bad, in order to withdraw all the counterfeit coin from circulation. The attempt was hailed with enthusiasm by the people, but it was short-lived; for Sylla, upon entering Rome as dictator, proscribed Gratidianus as a political rival.¹

Sylla was among the first to issue gold coins in any considerable amount as Imperator, the generals in the field having this privilege. The gold brought as tribute-money from conquered nations was generally stored in the treasury in the shape of bars. Sabatier gives as deposited in the Roman treasury in 157 B. C., in the shape of ingots, gold to the amount of 100 millions of sesterterii, in round numbers; and in 91 B. C., at the commencement of the Social War, 8,000 millions, — an enormous augmentation in the amount of gold in a comparatively short period. Notwithstanding the cost of the Social War

¹ Lenormant, vol. i. p. 231.

and the great waste caused by the contentions of Sylla and Marius, the treasury was replenished by the booty from foreign wars. "The large quantity of gold in bars brought by Cæsar from the wars against the Gauls caused the temporary fall of gold to such an extent that it was only worth in commerce 3,000 sesterii the pound, that is, its value as merchandise compared with silver was 1 to 8.93."¹

When Cæsar crossed the Rubicon, in 49 B. C., and entered Rome, his first thought was to seize the treasury abandoned by Pompey, in which he found, according to Sabatier, gold in bars to the value of 7,400 millions of sesterii, silver in bars to the amount of 680 millions, and nearly 400 millions of coined money.

The gold coins issued by Sylla, Pompey, and Cæsar did not represent a certain number of denarii, but were made to weigh a certain fraction of the pound.² The earliest piece of Sylla was $\frac{1}{30}$ of the pound, and then $\frac{1}{36}$. The aureus of Cæsar was $\frac{1}{40}$ of the pound, equal to 8.18 grams, and seems to have been the first gold coin struck in Rome.³ When tranquillity was restored to the state, and Augustus reformed

¹ Lenormant, vol. i. p. 166.

² Ibid., vol. ii. p. 320.

³ Ibid., vol. ii. p. 317.

the monetary system, he maintained for a time the aureus of $\frac{1}{40}$ of the pound, made equal to 25 denarii at the relative value of 11.91. The sestertius ceased to be a silver coin and became bronze, so that 100 bronze sestertii were nominally equal to the aureus.¹

The portraits of Sylla, Pompey, Cæsar, and others, had already appeared on coins, and from the time of Augustus appeared regularly the head of the Emperor, or of some member of the Imperial family.

"When Augustus adopted gold as a standard, he seems to have endeavored to establish a bi-metallic money. At least he determined that the intrinsic value of the silver denarius should be equal to its nominal, in relation to the aureus, according to the market value of the two metals at the time of his reform. Under his immediate successors the same rule was observed, and, when any change was made in the money, alterations were effected in the gold coins as well as in the silver."² As the privilege of coining gold had belonged to the Emperor during the Republic, it was under this title that it belonged exclusively to the Emperor, and it appears that gold was coined

¹ Lenormant, vol. i. p. 170.

² Ibid., p. 182.

solely by him throughout the empire, with some exceptions accorded to tributary princes. The right of coining silver and copper, which had been retained by some of the provinces, was gradually curtailed. The Roman Senate itself lost in time its privilege of coining copper for Italy. Egypt appears to be among the last of the provinces which lost its monetary independence, and by the time of Diocletian the coinage of the whole empire was concentrated in the imperial hands.¹

The double standard of gold and silver established by Augustus was not of long duration. The aureus, before the end of his reign, appears to have been reduced to $\frac{1}{42}$ of the pound.² Under Nero it was diminished to $\frac{1}{45}$. The silver money was first reduced in weight, and then gradually debased, until finally it consisted of pieces of copper merely washed over with silver. The relative value of the two metals was in a state of fluctuation. Under Nero it was 1 to 10.31; under Trajan, 1 to 9.37; and the ratio changed constantly under the different Emperors. Under Vespasian (69–79 A. D.) gold had practically become the measure of value, and silver only token money. Although

¹ Lenormant, vol. ii. p. 178.

² Mommsen.

accounts were still kept in denarii and sestertii, these pieces represented fractional parts of the aureus, as the shilling in England represents the $\frac{1}{20}$ of the sovereign.¹ Under Caracalla (211–217 A. D.) the weight of the aureus was reduced, and the diminished coin was by law to be received at its nominal value, under severe penalties.² In the mean time the silver was more and more debased. "No law could maintain it at its nominal value, and under Heliogabalus and Alexander Severus (222 A. D.), in order to establish some fixity in the public revenues, it was decided that the payments to the treasury should be made exclusively in gold."³

The whole monetary system was in a state of chaos during the third century. To such a state was the silver reduced, that copper money was hoarded in preference to it, and gold driven out of circulation to a great extent.⁴ Prices rose in consequence of the depreciation of the currency, as is always the case, until a laborer received twenty-five denarii for a day's work. Even the gold pieces were struck without any regularity, and they were accepted, in spite of imperial decrees, only by weight.

¹ Lenormant, vol. i. p. 184.

² Ibid.

³ Ibid., p. 185.

⁴ Ibid., p. 172.

Aurelian (270-275 A. D.) attempted a reform, but the mint authorities and their adherents, who made a profit out of the monetary confusion, were so strongly intrenched that they were only subdued after an armed conflict, in which seven thousand men lost their lives. Diocletian (284 A. D.) took up the cause of reform, which was finally carried out under Constantine the Great (306-337 A. D.).

The unit of the Constantine system was the solidus, a gold piece weighing $\frac{1}{2}$ of the pound, which was the weight of the silver denarius when first coined in 268 B. C. Under his successors, Christian emblems appeared on the coins, which were generally very thin pieces of metal, and the workmanship upon them showed a most marked deterioration from the early years of the Empire.

Before entering into what may be called the modern history of metallic money, it will be well to review the ground passed over, and to draw some interesting conclusions from the facts presented.

It will be seen that metallic money was in use long before the invention of coinage, that is, long before the government undertook to guarantee its weight and purity. Money was not,

therefore, a creation of the governing power, but was accepted by the voluntary consent of the public. Jevons says, that "in the early stages of society the use of money was not based on legal regulations." Chevalier and other writers make the same assertion, — that money was adopted by the universal consent of mankind. Mommsen, in speaking of the changes in the standard of value in Rome, says, "Naturally the cause of such a revolution was not in any positive law, although such is its final expression." Again he says, "The Roman merchant had reckoned for a long time according to the pound of silver, while the only national money was the copper as," alluding to the gradual change from copper as the standard to silver. The natural development is from the less convenient to the more convenient metal. When the more convenient metal enters into circulation in sufficient quantities, it is then legally adopted. A government may modify or obstruct the natural course of the development, as has been done in ancient as well as modern times; but in doing this it may create great financial trouble.

It will also be seen that the attempts to maintain a bimetallic or trimetallic standard were not

successful. In Persia, where the legal ratio of 1 to 13½ was strictly maintained, the silver was driven from circulation by the depreciation of gold, which became practically the sole standard of value.

An interesting inquiry presents itself in regard to the changes of standard in Assyria. The cuneiform inscriptions given by Oppert and Lenormant speak of copper money at least two or three centuries before coinage was introduced into Persia. What its relative value was to silver and gold does not as yet appear, but it was evidently weighed, and passed as a medium of exchange by weight, like silver and gold. There are also inscriptions of contracts, showing that it was lent as money, and drew interest. The question arises, therefore, whether this copper money was the remnant of an older standard; for the prevailing metal from 800 to 500 B. C., or for even a longer time, appears to have been silver, judging from the inscriptions so far given. It has been claimed that copper was the original metallic standard of India.¹ If that was the case, it is possible that copper may have been the earliest metal standard also of Assyria. It is to be hoped that future dis-

¹ New Marsden.

coveries will elucidate the question, as it would be interesting to know that the development of the Assyrian monetary system was like that of many other states.

The trimetallic standard established by the Ptolemies in Egypt did not last long, as the gold coins had to be diminished in weight and the copper became in time subsidiary, leaving silver as the standard practically until Roman imperial times.

In Sicily the change from a sole copper standard to a double but transitory one of copper and silver, and then to a single silver standard, can be distinctly seen. In Rome can also be clearly traced the change from a single standard of copper to a double one of copper and silver, then to a single silver, followed by a double silver and gold, and finally to a single gold standard. The periods when double standards existed were simply periods of transition.

"We can lay down as a principle, that the ancients knew nothing about the impracticable pretension of what is called at the present time bimetallic money, or a double standard. On the contrary, we find that they always adopted one metal as the fundamental standard and

regulator of the whole monetary system. The metal selected varied, as must necessarily happen, according to the particular circumstances of the countries and epochs." ¹

It will likewise be noticed that the attempts, even in despotic governments, to make debased money pass for its nominal value without limiting its debt-paying power, had the effect of driving the good money from circulation, and leaving only the debased behind. The experience of Rome in Cicero's time and during part of the Empire is most conclusive testimony. To protect themselves, people were obliged to accept payments only with the scales in their hands, and were brought back almost to the times of direct barter.²

The monetary leagues must be briefly alluded to. The Lycian confederation has already been spoken of, which does not appear to have lost its entire monetary independence, although at times suspended, until the reign of the Emperor Claudius.³ In addition to monetary conventions between neighboring cities, an instance of which is preserved in a treaty between Phocæa and Mitylene, there were several

¹ Lenormant, vol. i. p. 173.

² Ibid., p. 185.

³ Warren, Greek Federal Coinage, p. 37.

leagues, embracing many towns, such as the Thessalian, the Bœotian, the Ætolian, and, most famous of all, the Achaian, which flourished, however, at a much later date than the others. The league coins bore generally the symbol or the name of the league, as well as the symbol of the city issuing them. Such was the feeling of local independence, however, that, notwithstanding the leagues, the variety of coins of different systems in circulation was very great up to the time of Alexander.¹

Although the Athenian tetradrachma and the gold pieces of Cyzicus were employed to a great extent in commerce, there was no one coin current throughout the Grecian world. In every important city were exchange-brokers, who seem to have had a lucrative business. Lenormant says that "the governments were led more than once to consider the losses sustained by private individuals, who were obliged to have recourse to the money-changers."²

The conquests of Philip and of Alexander led the way to what may be called an "international coinage. The gold and silver pieces of Alexander were current over a large extent of territory in Europe, Asia, and Africa. His

¹ Lenormant, vol. ii. p. 54.

² Ibid., p. 58.

gold stater was the successor of the Persian daric.

The Roman aureus, which succeeded the stater of Alexander, had even a more extensive circulation under the Emperors, embracing almost the whole of the civilized world.

II.

AT the beginning of what may be called the modern history of metallic money, we find political changes taking place in Europe which had great influence upon the monetary systems. Upon the ruins of Roman power arose numerous independent sovereignties. Instead of a single monetary system, embracing the whole of civilized Europe, every petty state and town had in time its own. The Merovingian monarchy, founded by the Franks, retained the gold solidus, or sol, as the unit of its system, but reduced in weight to $\frac{1}{84}$ of the Roman pound, or 3.65 grams. The triens, or third part of the sol, which became the principal gold coin in circulation, weighed consequently less than the American gold dollar, or the five-franc gold piece. In Spain, gold was also maintained by the Gothic monarchy, but gradually that metal, both in France and Spain, as elsewhere, dis-

appeared from circulation. In the confusion following the inroads of the barbarians, and the almost constant wars succeeding, money was naturally hoarded, particularly that which was the most valuable. Silver became, therefore, the measure of value; but even large quantities of that metal disappeared, by abrasion and otherwise.

The amount of gold and silver estimated by Jacob as circulating in Europe during the reign of Augustus was £358 millions. In 806 A. D., in the time of Charlemagne, that amount was supposed to have dwindled to £33 millions. At the time of Pliny and the Antonines, the price of wheat, as given by Levasseur, was 46 centimes of present French money, valued in silver for one kilogram, or $2\frac{1}{2}$ pounds avoirdupois. This is about the same price as is given by Dureau de la Malle for Athens in the time of Demosthenes, and is the same as that of France in 1848, before the discovery of the mines of California and Australia. In 749 A. D. so small a quantity of money was left in circulation, and its purchasing power was consequently so great, that the kilogram of wheat cost only four centimes. In 806 A. D. the price of wheat rose suddenly one third, simply on account of a certain amount of

money, and that not a large one, taken as booty in storming the camp of the Avars. This fact presents a very forcible picture of the money penury of the epoch.

During the Middle Ages the amount of gold in circulation was small; the silver money was generally debased, and, instead of copper taking the place of the small fractional parts of the unit, billon was used, — a mixture of silver and copper. It is unnecessary to speak in detail of the numerous frauds committed by different governments in their issue of money, and the number of debasements that took place. Levasseur says that in France, from the twelfth century to the establishment of the Royal Bank in the eighteenth century, the value of the silver coins was fixed by law 250 times, and that of gold 147 times.¹ The attempts made by the people to protect themselves against these repeated debasements were of no avail.

“When Philip le Bel debased the silver money, he did not touch that of gold: the people consequently made contracts in gold: this the King seeing, he prohibited under severe penalties that any more contracts should be

¹ Levasseur, *Système de Law*, p. 396.

made in gold. Then foreign merchants no longer came to France.”¹

Le Blanc, in speaking of the results of the debasement of money upon the French nation, thinks that the French nobility were beaten in their wars with the English because the deterioration of the money had made them poor. He adds: “Nothing destroys courage so much as poverty; a horseman badly mounted and badly armed is already half conquered.”

From 1295 to 1306 the denier was reduced so much that an old one was worth three new ones. “The reduction caused a terrible sedition in Paris. The people wished to pay with light money, not having the means to procure the heavy without considerable loss; the rich, on their side, demanded payment in the heavy money, not wishing to accept the light on account of the loss it would entail. The people, reduced to despair, lost the respect due to his Royal Majesty. They pillaged the houses of the Director of the Mint, and then besieged the Temple, where the King was, throwing down the dishes that were being carried to his dinner.”²

¹ Le Blanc, *Histoire des Monnaies de France*.

² *Ibid.*

Petitions were frequently sent to the government begging that good money should be struck, but without any effect. Whenever there happened to be a scarcity of change, people were ordered by the authorities under severe penalties to carry their silver plate to the mint, where it was coined with whatever amount of alloy the government choose to adopt. Philip of Valois went so far as to make the mint officials swear on the Bible not to reveal what the amount of the alloy was. Although the government was able to force the people to accept its currency, it could not control prices. Among those who suffered most from the debasement of money were the land-owners who had leased their lands for a long term of years. Their losses were very great.

The year 1510 is given by Levasseur as the date when silver, from its comparative scarcity, had the greatest purchasing power in France, before the American mines had been worked. He estimates that the same amount of money could then purchase twelve times as much as during the century when Pliny lived. Soon the influence of the mines in America began to be felt. Between 1560 and 1590 the change was very rapid, as large amounts of silver and

gold flowed into France. In about eighty years prices had increased sevenfold. So rapid was the rise, leading to great distress, that meetings were held of notable men and experts to devise some remedy. Decrees were published to prevent the rise of prices, and schedules were prepared by which people were to buy and sell; but all in vain, the law was powerless. Prices augmented in defiance of the law.

In 1574 it was decided to fix the value of the ecu of gold at 58 sols. The law had no effect. The ecu was then legally valued at 60 sols, but the "people pushed the price to 68 sols."

In 1575 copper money was issued to take the place of the smaller pieces of billon. Fortunately it was decreed that "the copper money should have a debt-paying power only to 20 sols. Spain saw herself reduced to very great extremities for having acted otherwise." The evil continuing, another assembly was held, "in order to arrest this disorder, which will infallibly ruin the kingdom." It was finally decided to estimate all contracts in gold, as the gold coins had suffered comparatively little alteration. The ordinance was published in 1577, "to take the said ecu as the basis and

only foundation of all accounts, values, and estimations." And in order to give practical effect to the decree, there was published "a prohibition to all the goldsmiths to make for two years any gold plate exceeding four ounces, or any silver plate exceeding two marks, except for the princes."

The gold standard did not, however, last long. By a decree of Henry IV. in 1602, silver was re-established as the standard, the livre being the unit. The depreciation of silver still continued until the ecu was worth 72 sols, in 1609. So great was the distress throughout the kingdom that assemblies of experts were held in Paris and in Fontainebleau to seek some cure for the evil; but opinions were divided as to the proper remedy, and before any conclusion could be reached Henry IV. died. The relative value of gold to silver at that time was 1 to $13\frac{1}{16}$.

By the year 1629 the full effect of the early outflow from the American mines had been felt, as prices from that time remained about the same until 1848.¹ The increase in the amount of gold and silver from 1629 to 1848 was fully met by the increase of production and the expansion of commerce.

¹ Levasseur, *La Question de l'Or*.

During the reign of Louis XIV. a decree was issued that the louis d'or, which was the name given to the principal gold piece then circulating, should be accepted for 10 livres. As the market price was higher, it passed for 12 livres, in spite of the royal ordinance, and the King was forced to change the law. In 1692, when Le Blanc's book was published, the relative value of gold to silver was 1 to $15\frac{1}{4}$, the highest point, he writes, that gold had ever reached. By the law of 1785 the proportion was made 1 to $15\frac{1}{2}$, following, as it was distinctly stated, the relative value of the two metals in other countries; the gold coins were, therefore, slightly diminished in weight, as silver was the standard. "The relation of our gold coins to the silver coins will be re-established in the measure required by that which prevails among other nations." This proportion was retained when the coinage was reformed under the Republic and the Empire, in accordance with the metric system.

By the law of 1803, the silver franc, divided into 100 centimes, was made the unit, weighing 5 grams $\frac{9}{10}$ fine, which was simply the livre tournois slightly increased in weight. The multiples and divisions of the franc were also of

even metric weights; the two-franc piece weighing 10 grams; the five-franc, 25 grams; and the half-franc, 2.5 grams.

The copper was coined in conformity with the metric system, and in 1810 its legal-tender power was limited to five francs. Before that date, by the law of 1783, copper was legal tender for 10 livres up to 400 livres, and in all payments above that amount to $\frac{1}{40}$ of the entire debt. The new copper coins were considered inconveniently large; but it was not until 1852, after repeated attempts, that they were reduced to one half of their former weight. The one-centime piece now weighs 1 gram, five centimes 5 grams, and ten centimes 10 grams. As the gold coins, which had full legal-tender power, were struck at the ratio of 1 to $15\frac{1}{2}$ of silver, they could not be made to weigh an even number of grams, or even fractions. The relative value of the two metals being now changed, there is no reason why the gold coins should not be made to weigh even fractions.

After the great outflow of gold from California and Australia, a gradual change took place in the relative value of that metal to silver. The legal ratio of 1 to $15\frac{1}{2}$ being still maintained, silver was driven from circulation, and gold

gradually took its place, until it became practically the standard of value. The silver coins reduced to a fineness of .835, with the exception of the five-franc piece, were made subsidiary by limiting their legal-tender power to 50 francs. In 1876 the right to have the five-franc piece coined, whose debt-paying power was still unlimited, was taken from private individuals, and vested solely in the government.

After the destruction of the Roman empire in the West, and during the inroads of the barbarians, there was very little money struck in Italy. The coins of the Empire which were in circulation were sufficient for all purposes. Gradually, as separate states were organized, coinage recommenced. Silver became the standard, as elsewhere in Europe, and the denaro the unit, as the denier was in France and in England,—the successor of the Roman denarius.

The same process of debasement is visible in the Italian coins as in those of the rest of Europe. In Italy, however, commerce developed early, and with it an increased amount of coinage. The first gold of modern times was struck in Florence, hence called the florin, in 1252, bearing on one side the Florentine lily,

and on the other St. John the Baptist, the patron saint of the city. Florence was so prosperous that it became the banking centre of Europe, and remained so for many years, although its prosperity was at one time rudely shaken by the refusal of Edward III. of England, in 1339, to repay to the great banking-house of Peruzzi the sum of 1,355,000 gold florins borrowed from them, which caused their failure. The florin, which weighed 3.53 grams,—about the size of the American $2\frac{1}{2}$ dollar piece,—became celebrated, and was copied by various states. The gold sequin, or zecchino, of Venice had also an extensive circulation. Its name was derived from the gold coins of Cyzicus, which were still current in the East. As Italy was divided into many states and principalities, the money systems became very numerous, which led Scaruffi, in 1579, to propose that all the Italian states should use the pound of Bologna as the unit of weight, and that the relative value of gold to silver should be considered 1 to 12, and the relative value of silver to copper 1 to 120, which he says are the true proportions as laid down by the “divine Plato.” He proposed, further, that all coins should bear numerals indicating their

weight and fineness, and also the number required to weigh a pound, securing in this way their universal currency, "as if the world were a single city or monarchy." His hopes were unfulfilled, and the various systems were not merged into one until Italy became politically united a few years since.

The monetary history of England is very nearly a repetition of that of France. The standard was silver, and the silver penny was the unit, which originally weighed $\frac{1}{240}$ of the pound, but was gradually diminished during successive reigns until it finally disappeared entirely as a silver piece. The coins were also very much debased under many of the sovereigns. In the time of Edward VI. the alloy was three times as great as the silver. The shilling, which was first issued in 1503, became so debased that, when the currency was reformed under Queen Elizabeth, it was valued only at two pence and a farthing. A partial reform was effected during the reign of Edward VI. It was decided to coin sixty shillings from the Troy pound of standard silver, the crown-piece to weigh an ounce, and the shilling four penny-weights, "so that the people could thereby more easily understand what the weight of these

coins ought to be.”¹ Queen Mary made the standard of fineness for silver $\frac{11}{12}$, like that of gold. Queen Elizabeth, however, reverted to the old standard of fineness, which was .925, and coined sixty-two shillings from the pound. “By this means, she defeated one of the objects which her brother had in view, of making all the silver coins of known weights and aliquot parts of the pound Troy.”² The recoinage in her reign was at the cost of the holders of the base money.

In 1696 another recoinage took place, owing to the bad condition of the currency. This was at the cost of the government, which spent, it is estimated, £2,700,000. The same changes in the purchasing power of money can be seen in England as in France. Jacob says that in 1439 a clergyman could live in England on £10 a year. In 1496 Lady Ann, daughter of Edward III., was allowed £1 1s. a week for her “exhibition, sustentation, and convenient diet of meat and drink; also £80 12s. a year for one gentlewoman, one woman, one girl, one gentleman, one yeoman, and three grooms, which included their clothing and wages; besides £25 10s. 4d. for the main-

¹ Lord Liverpool.

² Ibid.

tenance of 7 horses." Prices rose rapidly as the volume of money augmented, the fluctuations coinciding very nearly with those on the Continent. The attempts to maintain the legal value of gold to silver were unavailing. Although the guinea was legally rated at twenty shillings, it passed at one time for thirty.

As commerce expanded, gold flowed into circulation. In 1717 the double standard was established, and gold was placed upon an equality with silver as to capacity in paying debts. This same year Sir Isaac Newton said, "If silver money become a little scarcer, people will in time refuse to make payments in silver without a premium." In 1774 silver was limited to payments of £25. Four hundred years before, under Edward III., gold was the metal whose legal-tender power was limited, only three gold nobles being legally allowed in any one payment. In 1783 silver was again elevated to an equality with gold, — to be reduced again, however, to a subordinate position in 1798. In 1805, when Lord Liverpool wrote his famous letter to the King, gold was practically the sole standard. He says, "The gold coins are now become, in the practice and opin-

ion of the people, the principal measure of property"; and again, "The gold coins have in fact become for almost a century the mercantile money of the kingdom." Finally, in 1816, gold was made, by the law now in force, the sole standard, silver being limited to forty shillings in any one payment.

Before the coining of copper money by the government, private tokens were used, and so much inconvenience was felt from the want of change that petition after petition was sent to the authorities begging that some relief might be given. The first government issue of copper, its legal-tender power limited in the first place to a sixpence and afterwards to a shilling, may be dated from 1672, for, the farthings coined in 1613 were only to be accepted voluntarily, and they met with little favor. In the copper coinage of 1797 the pieces were made equal to their nominal value, and the penny, weighing one ounce avoirdupois, was really the $\frac{1}{24}$ of the sovereign. The price of copper, however, rose, or rather silver fell, for it was at the time of the great outflow of silver from the mines of Mexico, and it was found impossible to maintain the legal valuation of the two metals. The weight of all the copper coins

had to be reduced, and they are now strictly token pieces, their nominal being very much higher than their intrinsic value. Both the silver and copper coins are now simply fractional parts of the gold sovereign, and, being issued considerably below their nominal worth, they are placed beyond the limit of any probable fluctuation in their relative values.

The monetary history of Spain presents one feature of great interest. Although Spain had been the principal recipient of the vast treasures of gold and silver from her possessions in America, she was at one time almost entirely deprived of the precious metals, they having been driven away by the copper money which inundated the country. In 1603 copper *quartillos* were issued, which, as the name signifies, were one quarter of the silver real. The total government emission was to the value of six millions of ducats, but it is presumed that nearly three times that amount came into circulation as counterfeits. These copper coins having full legal-tender power, the government made a profit of nearly fifty per cent. "But soon the people perceived the fraud. Manufacturers hid their merchandise, and work was everywhere interrupted." Gold and silver

were either hoarded or exported from the country.

Untaught by the experience of his predecessors, Philip IV. coined copper money, with unlimited legal-tender power, washed over with silver, to which he gave a fictitious value four times greater than its real worth. "This measure was ruinous to commerce and industry." All confidence in the government was destroyed, and "merchants even refused to advance provisions for the royal table on credit." "Bankruptcy terminated worthily this disastrous reign in 1665."¹

In Sweden a similar attempt was made. The wars of Charles XII. having drained the country of a large portion of its gold and silver money, copper was issued, and ordered to be taken at its nominal value, which was far in excess of its market value. The result was disastrous, and was one of the causes which led to the execution of Baron Goertz, the instigator of the scheme.

The history of the copper money of Russia confirms the experience of Spain and Sweden. In 1655 the Czar Alexis caused copper copeks to be issued of the same weight as the silver

¹ Weiss, *L'Espagne*, p. 175.

ones, which were to pass for the same value. A double standard of copper and silver was thus established, at the relative value of 1 to 1, that is, one pound of copper was made equal in value to one pound of silver by will of the Czar.¹ The power of the government was so great that the relative value was maintained for three years. In the fourth year 100 silver copeks were worth 104 copper ones. In the seventh year 100 silver copeks were worth 1500 copper ones. So great was the financial disorder caused by the arbitrary action of the government, that revolts broke out, and had to be put down with loss of life. In 1704, Peter the Great, untaught by the experience of his predecessors, decreed that his copper rouble, which was only worth intrinsically 25 copeks, should pass for a silver rouble. Copper was thus overvalued 566 per cent.² Four millions of copper roubles were coined by the imperial government, but it is estimated that nearly six millions more of foreign counterfeits were added to the circulation. The result was a rapid and great increase in all prices, which was the cause of much suffering.

¹ Henri Storch, Appendix to his Political Economy.

² Ibid.

In 1735 the Empress Anne made the copper rouble four times as heavy as it was before. By this increase of weight the copper rouble was overvalued only 53 per cent. In 1755 the copper rouble was again made heavier, so that it was intrinsically worth the silver one. In 1757 the rouble was reduced one half. The copper coins being very heavy, the government issued notes which were payable in copper, "in order to avoid the inconvenience which would accompany the employment of that metal." From 1757 until 1810 the weight of the copper money remained unchanged. In the mean time, however, the price of copper rose rapidly in the market. In 1803 it passed beyond the legal ratio, which was 1 to 57. The market value at St. Petersburg rose to 1 to 50, so that the government lost the difference, which was about 13 per cent. Copper money, now legally more valuable than silver, was melted and exported in large quantities. In 1806 the price of copper began to fall. In 1810 the copper rouble was reduced in weight, and silver was made the standard. In 1876 the right of private individuals to have silver coined was suspended by the government.

The monetary history of the United States

embraces but a few years, comparatively speaking. The selection of the Spanish silver dollar as the unit, in place of the English pound, was natural, as that coin was found in the Colonies in considerable quantities. The Spanish dollar was itself the successor of the Joachims-thaler of Austria, so named from being originally struck in a "thal," or valley. The division of the dollar into 100 cents, by the law of 1786, was the beginning of the decimal notation in modern coinage, which has been followed by many nations. Although gold was made a full legal tender, as well as silver, by the law of 1792, at the ratio of 1 to 15, in the subsequent change which took place in the legal valuation of the two metals it was the gold money which was reduced in value, and not the silver, until 1853. The eagle, or ten-dollar piece, weighed originally 270 grains, with a fineness of $1\frac{1}{2}$; the silver dollar, 416 grains, with a fineness of .899 $\frac{1}{4}$. In 1837 the fineness of $\frac{9}{10}$ was adopted for both metals. The eagle was reduced to 258 grains, and the silver dollar to 412 $\frac{1}{2}$ grains, and the ratio adopted was 1 to 15.98. Although the weight of the silver dollar was diminished, its fineness was increased, so that its value remained unchanged. In 1853 all the silver

coins, except the dollar, were made subsidiary, by diminishing their weight and limiting their debt-paying power to five dollars. In 1873 the gold dollar, weighing 25.8 grains, was declared to be the unit, and the half-dollar of silver with its subordinate pieces was to be coined in accordance with the metric system, — the half-dollar to weigh 12.50 grams, the half of the five-franc silver coin, and the minor pieces in proportion. The five-cent nickel piece had already, in 1866, been made to weigh 77.16 grains, equal to 5 grams. In 1878 the silver dollar was restored, unchanged in weight, with full legal-tender power, notwithstanding the fact that the relative value of gold and silver had altered since the first coinage; it was, however, to be coined exclusively on government account. In July, 1876, the relative value had risen to 1 to 20.17, and in 1878 it was about 1 to 18.

The cent, which originally, in 1792, was to weigh 264 grains, was reduced to 208 in 1793. In 1796 it was again diminished to 168 grains by Washington, who in his proclamation stated that it must be so reduced "on account of the increased price of copper and the expense of coinage." It was impossible

to maintain the legal ratio of copper to silver without a loss to the government. It was still thought desirable, at that time, that even the token coins should equal as nearly as possible their nominal value, as one of the safeguards against counterfeiting. It was learned by experience, however, that this was unnecessary when the debt-paying power is limited, and the coinage is exclusively on government account. The bronze cent now weighs only 48 grains, the real value of which does not exceed at the present time one quarter of its nominal value, and is a legal tender to the amount of twenty-five cents.

In reviewing the monetary facts of modern times, it is evident that they fully confirm the experience of antiquity. All attempts to maintain the legal ratio between copper and silver were fruitless, even under the strongest governments. In Russia, where the Czar endeavored to place copper upon an equal footing with silver, the results were disastrous. In Spain copper was overvalued 250 per cent, and, by possessing unlimited power to pay debts, it was one of the causes which resulted in an almost universal bankruptcy. In Sweden the consequences were equally bad. In England and

the United States, where copper was always considered subordinate to gold and silver, the fluctuations in its value forced the governments to reduce the weight of all the copper coinage in order to protect themselves from loss. Whenever the market price of copper rose above its legal valuation, either that metal was melted and exported, or else the coins had to be diminished in weight. In order to avoid future trouble arising from fluctuations in its value, it was found best to make the copper money entirely subordinate, by issuing it considerably below its nominal value and limiting narrowly its legal-tender capacity.

The efforts to maintain the legal ratio of gold to the debased silver coins were also unsuccessful, as the histories of France and England amply testify; and in recent times we have seen the vain attempts to preserve a double standard of gold and silver at an arbitrary ratio, silver being driven at one time from circulation, and gold at another, as the supply and the demand varied.

It has already been seen that the amount of gold and silver circulating in Europe at the time of the discovery of America was computed at \$170 millions. Notwithstanding the fact that

the amount of money seems to have remained nearly stationary for five or six hundred years, commerce was developed throughout Italy, and the principal cities were very flourishing. In Spain also the Moorish kingdoms attained to a high degree of prosperity. From 1493 to 1851, a period of 358 years, it is estimated by Soetbeer, an eminent authority, that \$3,270 millions, in round numbers, of gold, and \$6,650 millions of silver, were produced from the mines; and from 1851 to 1880, a period of 29 years, \$3,750 millions of gold and \$1,800 millions of silver. That is, more gold was added to the world's supply in 29 years than in the preceding 358. There seem to have remained in circulation not quite one half of the gold, and about one third of the silver. The total amount of gold money circulating throughout the world at the present time is placed at \$3,300 millions, and that of silver at \$2,700 millions. To this very large amount of gold money there is at present an addition every year of eighty to a hundred millions. Of the total sum of the silver money in circulation, more than a thousand million dollars are confined to India.

The amount of gold has increased so rapidly

that it has already become the measure of value in all the principal commercial nations, and laws have been passed in consequence, either declaring it to be the sole standard, or suspending the right of private individuals to have silver coined. Silver has thus, by the force of circumstances, become subsidiary to gold, and its debt-paying power must be limited in the same way that copper was made subsidiary to silver.

Gold being the standard of the principal states, the way is now rendered easier for the establishment of an international unit. Towards this all things are tending. Not only has gold become the chief metal employed, but also the fineness of $\frac{9}{10}$ has gradually been adopted, until now the only principal exception is England. Even there, the mint authorities have shown themselves willing to accept it in place of $\frac{1}{12}$.

The diminution in the number of monetary systems, even in the past few years, comparatively speaking, can hardly be realized, unless a retrospective view is taken. Instead of the disintegration which followed the fall of the Roman Empire, there is a gradual building up towards unity. The different units of England,

Scotland, and Ireland are merged into one. The last vestige of the feudal right of coinage, which the seigneurs of Boisbelle still possessed in France up to the last century, has been swept away. The United States have discarded their various units of colonial times, and their present dollar system has been copied by the Dominion of Canada and the Asiatic empire of Japan. In Switzerland, where a monetary league between seven of the Cantons was formed in 1825, the franc system now prevails throughout the confederation. In 1865 the Latin Union was founded, embracing France, Belgium, Switzerland, and Italy. In 1867, the year in which the International Monetary Conference met in Paris, Greece increased the value of her drachma, so as to enter the Latin Union. In 1868 Spain made her peseta equal to the franc, thus becoming practically a member of the same union. Roumania, Servia, and Finland have adopted the franc system. Austria now coins four and eight florin pieces, equal in weight and fineness to ten and twenty francs. Italy, in obtaining her political union under the leadership of the house of Savoy, has absorbed the many monetary systems of the peninsula. Germany, in founding an hereditary empire under the leader-

ship of Prussia, established a common monetary system in the place of its various complicated currencies, the mark valued in gold being made the unit, divided into 100 pfennigs. Sweden, Denmark, and Norway formed a monetary union in 1874, with the krone as unit divided into 100 öre. The five-peso piece of the Argentine Republic was made in 1881 to weigh 8.064 grams $\frac{9}{10}$ fine, — the precise weight and fineness of the twenty-five peseta coin of Spain, and of the twenty-five franc piece coined by Belgium in 1848, and which France offered in 1867 to add to her system.

The four principal units, which now offer themselves for general adoption, are the dollar, the franc, the sovereign, and the mark. So strong are national prejudices, however, that there is no probability of any present unit being selected, especially as there is none whose claims are superior to the others. The necessity of a compromise is, therefore, evident. A compromise to be acceptable must affect the different systems as little as possible, consistently with the object to be attained. In examining the English, French, German, and American systems for their nearest point of contact, it will be observed that the sovereign, the half-eagle,

the twenty-mark, and the twenty-five franc piece approach closely in value, and at the same time they weigh very nearly eight grams each. The twenty-five franc coin weighs 8.064 grams $\frac{9}{10}$ fine; the half-eagle, 8.359 grams $\frac{9}{10}$ fine; the sovereign, 7.988 grams $1\frac{1}{2}$ fine, but 8.136 if reduced to $\frac{9}{10}$ fine; the twenty-mark piece, 7.965 grams $\frac{9}{10}$ fine. By the adoption, therefore, of a gold coin weighing eight grams $\frac{9}{10}$ fine as the international unit, the present systems, with their monetary terms and divisions, which are familiar to the people, would be preserved. An even metric weight would be obtained, which is desirable, as that system will undoubtedly be eventually adopted by all civilized nations; not perhaps in England and the United States with the French nomenclature, it being difficult to suppress national terms, but by making the pound avoirdupois exactly equal to half a kilogram, and retaining the name *pound*, as has been done in Germany, where the Pfund now equals 500 grams.

The alterations in value would be slight, compared with the various reductions and modifications that have taken place without exception in all monetary systems in the past.

The value of the five-dollar piece would be

reduced about 22 cents; the sovereign, 4 pence; the twenty-five franc piece, 20 centimes; and the twenty-mark piece would be increased 8 pfennigs.

In making these changes it would, of course, be understood that the rights of debtors and creditors would remain undisturbed, and compensation would be given, or adjustments made, as was done in France, when the *livre tournois* was converted into the franc, and in Greece, when the drachma was increased from 4.477 to 5 grams.

The advantages to be gained by the adoption of an international unit are very great. The cost of the repeated recoinages of the gold balances, as they are shifted from country to country, would be saved. This expense is considerable, as "the coinage in every country is largely manufactured from newly coined money imported, and withdrawn from the circulation of other countries."¹ The loss sustained by travellers in exchanging their national into foreign money will be avoided, and clerical labor in computing amounts of foreign currency in bills of exchange, invoices, and other international documents, will be abridged.

¹ U. S. Mint Report, 1879.

As the bonds which unite countries to each other are being drawn closer and closer, it seems fitting that a coin should be adopted which shall have universal currency, not imposed by force, as were the international coins of antiquity, — the Persian daric, the stater of Alexander the Great, and the Roman aureus, — but established by the voluntary consent of civilized nations.

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